

REMARKS

Reconsideration is respectfully requested for the following reasons.

In paragraph 4, Claims 1, 2, 11-12, 26, 28, 30, 31, 33, 35-41, 46-55, 58 and 61-82 stand rejected under 35 USC 103(a) as obvious over Gutweiler (US 5,573,842) in view of Dauvergne (FR 2,401,941 Abstract), and Shohi (EP 1036775), further in view of Degeilh (US 4,696,971) and then in view of Masao (JP08-337446). In paragraph 5, Claims 59-60 stand rejected under 35 USC 103(a) as obvious over Gutweiler (US 5,573,842) in view of Dauvergne (FR 2,401,941 Abstract), in view of Shohi (EP 1036775), in view of Degeilh (US 4,696,971), and further in view of Keppler (US 4,433,108) and then in view of Masao (JP08-337446).

Claims 1, 69, 77 and 80 are typical of the claims.

Claim 1 is directed to a process for preparing a low color, polyvinyl butyral (PVB) sheet for use in the manufacture of glass laminates. The process comprises a number of steps. The first step (I) is admixing polyvinyl alcohol, butyraldehyde, an acid or mixture of acids, water, and *sodium dialkyl sulfosuccinate*, such as *dioctyl sulfosuccinate* (“DOS” or “DOSS”). The second step (II) is stabilizing the mixture obtained in step (I) by (a) *raising the pH of the mixture to at least pH 10*, (b) isolating the PVB resin composition by draining the liquid, and (c) washing the PVB resin composition with neutral pH water. The third step (III) is plasticizing the PVB resin composition with from about 30 to about 50 pph of plasticizer selected from the group consisting of triethylene glycol di(2-ethylhexanoate), tetraethylene glycol diheptanoate, dibutyl sebacate, and mixtures thereof, based on the dry weight of the resin. The fourth step (IV) is mixing (a) a PVB bleaching compound selected from the group consisting of organic bisulfites, inorganic bisulfites and sulfosuccinates, and, optionally, (b) an antioxidant and a UV light stabilizer with the polyvinyl butyral resin composition. The fifth step (V) is extruding the PVB resin composition at a temperature of from about 175°C to about 225°C to obtain a PVB sheet having a glass transition temperature (T_g) of greater than about 32°C and a YID of less than about 12.

Claim 69 is directed to the process of claim 1 further comprising laminating the PVB sheet to glass.

Claim 77 is directed to the process of claim 1 further comprising forming a windshield by laminating the polyvinyl butyral sheet to glass.

Claim 80 is directed to the process of claim 1 further comprising forming a glass laminate for use in a home or other building.

Rather than summarizing the entire Action, this document will focus on the remaining issues pointed out in the Examiner’s “Response to Arguments” at pages 9-10 and 12 of the

Action. The comments focus on two issues: (1) the nature of the information in the Declaration; and (2) the Examiner's comments concerning the nature of the teachings concerning pH in Degeilh.

Applicants traverse the rejection for the reason that Degeilh leads away from the claimed invention by teaching away from use of a DOSS and carrying out step (II) of the independent claims by "raising the pH of the mixture to at least pH 10", and since none of the cited documents would lead the person of ordinary skill in the art to modify the process of Degeilh to arrive at the claimed invention. In addition, applicants submit that the claimed invention provides an unexpected result. These arguments were presented in detail in prior responses, so here applicants will focus on the two major topics presented in the Response to Arguments.

(1) THE NATURE OF THE INFORMATION IN THE DECLARATION.

The Action criticizes the Declaration for not providing adequate information. The Action states that the comparative data must include the compositions and processing steps.

Enclosed is a Revised Declaration Under 37 CFR1.132 that explains that all of the work was carried out by or under the supervision of the declarant and providing more detail concerning the compositions and processes used.

According to the Declaration, two PVB laminates were made from PVB using DOSS and different pHs. The first one was made with a flake neutralized at a pH of 10.2 as claimed. The second one is a comparative PVB laminate where the flake used to produce the material was neutralized at a pH of 8.5. Both were made using DOSS and were made on the same equipment using relatively the same parameters.

When each sample was viewed by Mr. Rymer, his observation was that the invention sample was very clear. The comparative sample showed defects. These differences were magnified when viewed under high intensity light, which is common windshield test used in the industry to observe clarity.

The samples were also evaluated under a microscope using UV light and counting and sizing device. Attached to the Declaration is a graph showing the gel counts. The lighter line (blue) to the left, when present, represents the invention and the darker line (red) (to the right) represents the comparative sample. The comparative sample had larger amount and larger size gel particles than the sample representing the invention. Higher quantities of and larger sized gel particles are unacceptable because they are easier to see and scatter light.

Given the above, it is Mr. Rymer's opinion that the invention, which involves use of sodium dialkyl sulfosuccinate (e.g., DOSS) and neutralizing to pH or at least 10, provides better clarity laminates than laminates prepared from PVB sheet made using a process involving sodium dialkyl sulfosuccinate and a neutralization step at lower pHs. He states that

the better clarity obtained with the claimed invention would not be expected based upon the Degeilh and the other documents cited in the rejections.

(2) EXAMINER'S COMMENTS CONCERNING pH IN DEGEILH.

There are three issues that applicants present for consideration: (A) the Action asserts that Degeilh teaches use of a pH of 9-11, (B) the Action asserts that the arguments are inappropriate because Degeilh teaches use of a pH of no more than 5 when PVB adhesion is an issue, and (C) the Action has improperly ignored all of applicants claims that encompass PVB adhered to glass.

(A) THE PORTIONS OF DEGEILH THAT MENTION Ph 9-11 ARE REFERRING TO PROCESSES USING OTHER EMULSIFIERS.

The rejection is incorrectly pointing to Degeilh column 1, lines 68 to column 2, line 2, in support of teaching use of a pH between 9 and 11 when DOSS is used. Degeilh expressly teaches away from using high pH with DOSS emulsifier. Degeilh teaches a process involving a step of neutralizing to a pH of no more than 5. The portion of Degeilh referred to in the Action is discussing a prior process described in Dauvergne (FR 2,401,941) that Degeilh considers to be inadequate, and that prior process uses other emulsifiers. Degeilh is focused on improving the Dauvergne, and the claimed invention is an improvement over both processes. Degeilh states that when DOS is used the neutralization must be discontinued when a pH of approximately 5 is reached, whereas the previous process uses different emulsifiers at a higher pH. Thus, Degeilh teaches away from the process steps of the claimed invention.

(B) ADHESION TO GLASS IS NOT THE ISSUE - THE TEACHINGS OF DEGEILH ARE APPLICABLE TO ANY PROCESS WHERE DOSS EMULSIFIER IS REMOVED.

The Action asserts that Degeilh only teaches away from using a pH of more than 5 when the product is used in applications where the ability to adhere to glass is critical. The Action seems to be taking the position that the only way a patent can be granted is if the claims are someone limited to the situation where adhesiveness or adhesion to glass is recited in the claims. This position of the Action is technically incorrect and is based upon an improper reading of Degeilh. Instead, Degeilh is teaching that *removal of the emulsifier* is critical to applications where the ability to adhere to glass is critical, and both Degeilh and the claimed invention involve removal of DOSS emulsifier.

Degeilh is teaching that removal of the emulsifier is critical to applications where the ability to adhere to glass is critical, and both Degeilh and the claimed invention involve removal of DOSS emulsifier. Since both processes are of the type where emulsifier is removed and in both cases the emulsifier is DOSS, the teachings of Degeilh are applicable to any

process where DOSS emulsifier is removed, and thus the person of ordinary skill in the art would read them as being applicable to the claimed invention.

Since Degeilh is teaching that if you use DOSS instead of previously used emulsifiers, such as sodium alkylsulfonate, and states that neutralization should be discontinued as soon as a pH of approximately 5 is reached, then Degeilh's teachings are applicable to any process that involves removal of DOSS emulsifier. Therefore, Degeilh is teaching away from the claimed invention.

Looking at this closely, it appears that the Action is relying upon the following portions of Degeilh:

Column 1, lines 57-68.

"However, the drawbacks of these processes can be seen when the emulsifier used is a sodium alkylsulfonate or sodium alkylaryl-sulfonate, such as sodium dodecylbenzene-sulfonate or sodium aryl-sulfonate. These emulsifiers are necessary to prevent an agglomeration of polyvinyl butyral particles which would greatly diminish the optical quality of the polymer product. Unfortunately, if these emulsifiers are left in the polyvinyl butyral product, they also reduce the product's ability to adhere to glass. As a result, these emulsifiers must be removed in the after-treatment of the polyvinyl butyral product. ..."

Column 2, lines 24-40.

"Advantageously, in the present invention, the emulsifier DOS is completely and inexpensively removed from the polymer by a thorough washing with water at ambient temperature. As a result, a product is inexpensively obtained which has superior adhesiveness to glass materials. In addition, unlike conventional washing processes, the washing process of the invention does not produce ethyl-2-hexenal, which has a very unpleasant odor.

"In comparison to conventional emulsifiers, smaller quantities of DOS are required to produce identical quantities of polyvinyl butyral. Moreover, the use of DOS effective as an emulsifier substantially decreases the "curing time" of the polyvinyl butyral after neutralization to a range of 5 to 10 minutes. The period of curing using conventional polyvinyl butyral is generally one hour."

Degeilh teaches using DOSS as an emulsifier instead of the previously used emulsifiers such as sodium alkylsulfonate. These portions of the specification are stating that the emulsifier, whether it is the previously used ones or DOSS, must be removed for applications where adhesion to glass is important. The claimed invention is directed to a process where DOSS is used as an emulsifier and like the process of Degeilh the DOSS is removed during the process.

Since the claimed invention and Degeilh are both processes where emulsifier is removed and in both cases the emulsifier is DOSS, the teachings of Degeilh are applicable to any process where DOSS emulsifier is removed and thus the person of ordinary skill in the art would read them as being applicable to the claimed invention. Since Degeilh is teaching that if

you use DOSS instead of previously used emulsifiers, such as sodium alkylsulfonate, and states that neutralization should be discontinued as soon as a pH of approximately 5 is reached, then Degeilh's teachings are applicable to any process that involves removal of DOSS emulsifier. Therefore, Degeilh is teaching away from the claimed invention.

(C) THE ACTION HAS IMPROPERLY IGNORED ALL OF APPLICANTS CLAIMS THAT INVOLVE ADHESION OF PVB TO GLASS.

If for some reason the Examiner is not persuaded that the position concerning adhesion to glass is technically incorrect, the Examiner must still consider the claims focused on carrying out the process through making glass laminates, windshields and buildings, respectively, such as claims 69, 77 and 80. Those claims involve adhering PVB to glass and applicants have pointed this out in prior responses. Therefore, applicants respectfully request that any future Action specifically address these claims.

SUMMARY

In summary, in the claimed invention a mixture of polyvinyl alcohol, butyraldehyde, an acid or mixture of acids, water, and sodium dialkyl sulfosuccinate (e.g., DOSS) obtained in step (I) is stabilized by (a) raising the pH of the mixture to at least pH 10, (b) isolating the PVB resin composition by draining the liquid, and (c) washing the PVB resin composition with neutral pH water. Applicants submit that the Degeilh leads away from the claimed invention by teaching away from a process comprising the two key steps of:

- use of sodium dialkyl sulfosuccinate (e.g., DOSS); in combination with
- the stabilizing step (II) involving (a) raising the pH of the mixture to at least pH 10, (b) isolating the polyvinyl butyral resin composition by draining the liquid, and (c) washing the polyvinyl butyral resin composition with neutral pH water,

and since none of the cited documents would lead the person of ordinary skill in the art to modify the process of Degeilh to arrive at the claimed invention. In addition, applicants submit that the invention provides results that would not be expected based on the cited documents. For these reasons, applicants respectfully request that the rejections under 35 USC 103 be withdrawn.

In view of the foregoing, allowance of the above-referenced application is respectfully requested. Should any matters remain, the Examiner is invited to telephone the undersigned at the below-listed direct dial telephone number in order to expedite prosecution.

Respectfully submitted,

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